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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BOWMAN, ANDREW J

ART UNIT	PAPER NUMBER
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1711

NOTIFICATION DATE	DELIVERY MODE
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07/09/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/519,338	Applicant(s) LERF, RETO	
	Examiner ANDREW BOWMAN	Art Unit 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-25, 29-36, 42, 43, 45 and 46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-25, 29-36, 42, 43, 45 and 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/17/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 8-25, 29-36, 42-43, and 45-46 remain pending in the current application.

Response to Arguments

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. Claims 22, 24 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Specifically, in independent claim 8, applicant claims "producing a surface micro-structure on the open-pored structure by a vacuum plasma spraying method." However, in the subsequent dependent claims, 22, 24 and 31, applicant claims a different coating method that does not correspond with vacuum plasma spraying. Therefore, examiner was unable to treat the claims on their merits, because one is unable to simultaneously produce a coating via two methods.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1711

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 8-12, 17-20, 23, 25, 29, 30, 32-36, 42, 43, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rey et al. (US6280789).

b. Regarding claims 8-10, 25, 29, 30, 32, 42, 43 and 45, Rey teaches that metallic substrates (column 2, lines 28 and 29) coated with a metal and hydroxyapatite, both by vacuum plasma spraying (column 2, line 66 through column 3, line 6), are well-known. Further, Rey teaches that the deposited coating is porous and it can be desirable to increase the porosity further (previous citation). Rey fails to teach the specific porosity range of the current

Art Unit: 1711

claims, however 1) it is known that if porosity of any material is too high, the material itself becomes structurally weak, 2) in the prior art in general, it is known that at least a certain amount of porosity is structurally required and desirable for osteoconductivity and bone ingrowth of medical implants, wherein the porosity is open in order to allow for said bone ingrowth. This additionally applies to the size of the pores. Therefore, it is the position of the examiner that if the porosity range of Rey does not inherently meet the limitations of the current claims, it would be considered obvious for one of ordinary skill in the art to optimize the percent porosity range and porosity size of the vacuum plasma coating described by Rey in order to promote said osteoconductivity and said bone ingrowth.

c. Regarding claim 11, the examiner is taking official notice to inform the applicant that it is common industry practice to sinter both metallics and ceramics deposited in the particle form in order to control the porosity of the manufactured substrate as well as to create a more homogenous and mechanically desirable coating.

d. Regarding claim 12, the examiner is taking official notice to inform the applicant that it is common industry practice to include sintering adjuvants to items that are to be sintered as the definition of a sintering adjuvant is: a material that aids in the sintering of another material.

e. Regarding claim 17, the teachings of Rey are as shown above. Rey fails to explicitly teach the use of a powder for his thermal plasma coating process, however the examiner is taking official notice to inform the applicant that the

Art Unit: 1711

most common way of providing material via thermal plasma spraying is through the use of a powder.

f. Regarding claim 18, Rey further teaches wherein the coating thickness is 0.1mm (previous citation).

g. Regarding claims 19, 33, 35 and 46, the teachings of Rey are as shown above. Rey is silent as to the particle size used for the biometal. However, 1) it is inherent that the particles of Rey have a particular average size, 2) the coating thickness of Rey is listed having an upper limit of 0.1mm (meaning that the particles size used must be less than 0.1mm). Further it is the position of the examiner that it is well known in the art that particle size used in a thermal plasma coating is directly related to the resultant coating thickness. Therefore in the absence of criticality of the specific particle size of the current claims, it would be considered obvious for one of ordinary skill in the art to optimize the particle size used in order to affect the coating thickness applied in a given amount of time as well as the porosity of the final product.

h. Regarding claim 20, Rey further teaches wherein the coating material used is titanium (example 1).

i. Regarding claim 23 and 36, the teachings of Rey are as shown above. Rey is silent as to the particle size used for the biometal. However, 1) it is inherent that the particles of Rey have a particular average size, 2) the coating thickness of Rey is listed having an upper limit of 0.13mm (meaning that the particles size used must be less than 0.13mm) (example 1). Further it is the

Art Unit: 1711

position of the examiner that it is well known in the art that particle size used in a thermal plasma coating is directly related to the resultant coating thickness.

Therefore in the absence of criticality of the specific particle size of the current claims, it would be considered obvious for one of ordinary skill in the art to optimize the particle size used in order to affect the coating thickness applied in a given amount of time as well as the porosity of the final product.

j. Regarding claim 34, it is the position of the examiner that based on the desired use of the material of Rey, it is unlikely that the particles used by Rey are completely compacted, and further, Rey does not teach compacting the particles.

7. Claims 13, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rey et al. (US6280789) in view of Shimamune et al., (US5034186).

k. Regarding claim 13, the teachings of Rey are as shown above. Rey fails to teach the use of a specific sintering adjuvant that results in the creation of a low melting eutectic. However, Shimamune shows that in sintering, it is common to supply sintering adjuvants to titanium that is to be sintered, that upon sintering result in a low melting eutectic caused by the presence of magnesium (col 2, lines 22-44). Therefore one of ordinary skill in the art would be motivated to used the particular sintering adjuvant of Shimamune in the invention of Rey, because Shimamune shows that such sintering adjuvants are suitable when sintering those types of materials taught by Rey.

l. Regarding claim 14, Shimamune further teaches that the sintering occurs in vacuo (col 1, line 59-col 2, line 2).

Art Unit: 1711

m. Regarding claim 16, Shimamune further teaches wherein the sintering temperature can be 800C (previous citation).

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rey et al. (US6280789) in view of Shimamune et al., (US5034186) and further in view of Maetani et al., (JP07090318).

n. Regarding claim 15, the teachings of Rey and Shimamune are as shown above. Rey in view of Shimamune fails to teach the use of a debinding phase in the sintering process. However, Maetani teaches that when using a binder in the sintering of titanium, it is common industry practice to perform a debinding step to remove the binder from the finished product as it is undesirable for the binder to be present in the finished product. Further, Shimamune specifically teaches the use of a binder in conjunction with his sintering process (col 2, lines 21-44). Therefore it is the position of the examiner that one of ordinary skill in the art would be motivated to use the debinding process of Maetani in the process of Rey and Shimamune in order to remove the undesirable binder from the finished product.

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rey et al. (US6280789) in view of Beyerlen et al., (DD205632).

o. Regarding claim 21, the teachings of Rey are as shown above. Rey fails to teach the specific use of titanium hydride as his titanium source for titanium thermal plasma spray deposition. However, Beyerlen shows that it is common industry practice to use titanium hydride as a source of titanium for titanium

Art Unit: 1711

deposition by thermal plasma spraying. Therefore, one of ordinary skill in the art would be motivated to use the titanium hydride of Beyerlen in the invention of Rey as Beyerlen shows that such material is suited for those types of depositions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW BOWMAN whose telephone number is (571)270-5342. The examiner can normally be reached on Monday through Friday (7:30 to 5:00)EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Barr/

Andrew J Bowman

Application/Control Number: 10/519,338

Page 9

Art Unit: 1711

Supervisory Patent Examiner, Art Unit 1711

Examiner
Art Unit 1711

10.